

**EVALUATING AN EVIDENCE-BASED PROGRAM THAT ADDRESSES  
CHILDHOOD OBESITY IN A MIDDLE SCHOOL**

by

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by

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### Evaluating an Evidence-Based Program that Addresses Childhood Obesity in a Middle School

This senior honors project was completed as part of a community health course in a university nursing program. In this course, senior nursing students are assigned to work with a registered nurse (RN) in various community health settings. This project was conducted in collaboration with the school nurse in a school-based health center (SBHC) in North Carolina. The project involved a community assessment, determining a priority health need for the community, an action plan, and implementation and evaluation program. The purpose of this project was to evaluate the implementation of the 5-2-1-0 Let's Go!, an evidence-based obesity prevention program in a rural middle school. The health messages of this program are eating 5 fruits and vegetables, watching 2 hours of screen time or less, getting 1 hour of physical activity, and 0 sugary drinks daily (Rogers, Hart, Motyka, Rines, Vine, & Deatrlick, 2013).

### **Literature Review**

Obesity is one of the most common chronic issues among children and has been called a “global epidemic” by the World Health Organization (Hoey, 2014, p. 519). Obesity is associated with various comorbidities and long-term consequences that may affect the child's physical, mental, and emotional health. Childhood obesity is the primary risk factor of adult obesity (Hoey, 2014). Contributing factors may include “genetic, environmental, food intake, exercise and emotional wellbeing” (Hoey, 2014, p. 521) Obese adults who were also obese as children have a poorer prognosis in relation to diabetes, heart disease, and psychological conditions than adults who develop obesity later in their life (Hoey, 2014).

The Institute of Medicine (IOM) (2012) published goals, recommendations, and potential actions for the prevention of early childhood obesity prevention related to growth monitoring, physical activity, healthy eating, marketing and screen time, and sleep. These goals reflect the

messages in the 5-2-1-0 Let's Go! program. Promoting these messages in the school setting is essential because the prevention of obesity necessitates a system-level approach.

A Cochrane Review found that children up to the age of 12 years old benefited from school-based obesity prevention interventions that were determined successful in helping to prevent childhood obesity. Interventions that promoted physical activity, alone or with diet, were successful in preventing or slowing BMI elevations compared to control interventions (Saguil & Stephens, 2012). One of those interventions is the 5-2-1-0 Let's Go! childhood obesity prevention program, a nationally recognized evidence-based program (Rogers et al., 2013).

In a community-based multi-setting study, Rogers, et al., (2013) reported that the 5-2-1-0 Let's Go! program demonstrated an increase in children consuming fruits and vegetables, limiting sugary drinks, and parental awareness of the program. Saguil and Stephens (2012) support the 5-2-1-0 Let's Go! program for community-based recommendations for childhood physical activity and dietary intake. Physical activity and dietary intake are two socially and environmentally influenced behaviors that are a major determinant of childhood obesity. Screen time has also been linked to sedentary behaviors and lower levels of physical activity; therefore, limiting screen time should increase physical activity among youth (North Carolina Institute of Medicine, 2010). Similar programs include Power Up and Go Wayne Go. The Power Up program includes this same message, but it also includes 3 balanced meals (Canterbury & Hedlund, 2013). Established in 2013, Go Wayne Go is a countywide initiative that promotes the daily goals of 5 fruits and vegetables, 3 balanced meals, 2 hours of screen time max, 1 hour of physical activity, and 0 sugary drinks (Go Wayne Go Initiative, 2015).

## **Method**

### **Setting**

This project was located in a county with a population of 124,583 that has a diverse ethnic and racial composition of non-Hispanic White (54.7%), African American (32%), and Latino (10.7%) residents (United States Census Bureau, 2014). The school setting had a student population of 444 in the 5<sup>th</sup> through 8<sup>th</sup> grades, which included non-Hispanic White (32%), African American (33%), and Latino (34%) students.

### **Program Evaluation**

The purpose of this project was to evaluate the implementation of the 5-2-1-0 Let's Go! program in a rural Eastern North Carolina middle school. The objectives were to collect, evaluate, and interpret demographic and descriptive data of selected high risk (HR) students with a body mass index (BMI) above the 95<sup>th</sup> percentile; interview key informants within the school setting; observe one or more physical education (PE) classes in the school setting; and observe BMI follow-up visits at the SBHC. The focus of these objectives was the 5-2-1-0 Let's Go! program.

In collaboration with the school nurse, health charts of selected students were audited who visited the SBHC during the 2014-2015 school year beginning January 27, 2015. The procedure used to select the health charts for the record audit began with the school nurse obtaining a list of students who had visited the SBHC for a BMI follow-up visit. The nurse used a specific code that identified BMI follow-up visit. Next, the nurse selected students with a BMI greater than or equal to the 95<sup>th</sup> percentile. These charts were then audited for descriptive (BMI) and demographic (age, race, gender) information.

Information gathered through key informant interviews was used to assess their understanding and implementation of the 5-2-1-0 Let's Go! program. Key informants included the school nurse (RN), family nurse practitioner (FNP), registered dietitian (RD), and one physical education (PE) teacher. Observational data from the PE class was used to determine if current programs meet the one hour of physical activity recommendation of the program. Observational data from BMI follow up visits was used to evaluate health teaching related to the 5-2-1-0 Let's Go! program.

### **Project Findings**

This record audit occurred over a 4 week time period. Grade level, gender, and BMI data for the 24 students who visited the SBHC with a BMI greater than or equal to the 95<sup>th</sup> percentile is listed in Table 1. There were no 8<sup>th</sup> grade females in the group. All 24 students had a BMI greater than or equal to the 96<sup>th</sup> percentile, only one student had a BMI in the 96<sup>th</sup> percentile, and 25% of the students had a BMI in the 100<sup>th</sup> percentile. There were more males (63%) than females (27%) and more 6<sup>th</sup> graders (37%) than 7<sup>th</sup> graders (30%), 8<sup>th</sup> graders (21%), and 5<sup>th</sup> graders (12%) (See Figure 1). Of these 24 students, 63% were African American, 25% were Latino, and 13% were White (See Figure 2).

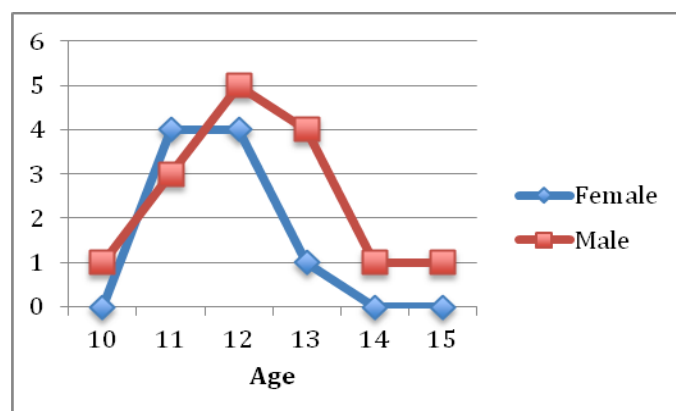
The audit revealed the registered dietitian had met with 18 of these students. During these encounters, the RD discussed daily physical activity, screen time, and healthy eating. Of these 18 students, all reported participating in physical activity at least 3 days a week for 1 hour. Two of the 18 students reported screen time of 2 hours and 1.5 hours per day. The remaining students did not have a documented screen time. The audit also revealed the FNP had met with all of these students at least once. These follow-up appointments are scheduled generally every 3-6 months depending on the student progress or how new they are to the program. During these

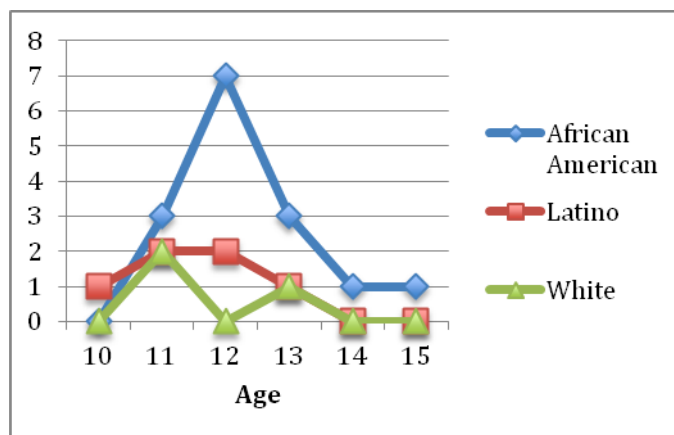
appointments, the FNP reviews their progress and discusses goal achievement. The FNP provides health teaching on each of the components of the 5-2-1-0 Let's Go! program and discusses potential complications, such as hypertension and diabetes. At the end of each visit, the FNP and student work to establish a goal. Examples of these goals were to eat breakfast every day, participate in a recreational or school sports team, and/or lose a specific number of pounds.

**Table 1. Demographic and Descriptive Data of Selected Students (N=24)**

	Females		Males	
Grade	BMI	Percentile	BMI	Percentile
5 (n=3)	26.99	97%	28.49	99%
	34.42	99%		
6 (n=9)	26.92	98%	24.33	96%
	27.34	98%	25.43	97%
	31.55	99%	28.27	98%
	41.19	100%	28.74	99%
			31.89	99%
7 (n=7)	38.12	99%	32.24	99%
	38.98	100%	33.24	99%
	48.56	100%	33.47	99%
			35.78	99%
8 (n=5)			29.72	98%
			30.97	99%
			39.97	100%
			39.06	100%
			44.39	100%

**Figure 1: Gender of Selected Students by Age (N=24)**



**Figure 2: Ethnic/Racial Composition of Selected Students by Age (N=24)**

Three key informants were familiar with the 5-2-1-0 Let's Go! program and one was not, however, all key informants were familiar with the county-wide initiative, Go Wayne Go. All four key informants recommended family involvement and hands on nutrition education. Examples given by the key informants included cooking classes and health fairs. The PE teacher primarily focused on daily physical activity. The PE teacher is responsible for physical activity 2/3 of the school year and health education classes for 1/3 of the school year for all students. Students also participate in additional physical activity if they are involved in a sports team through the school or other recreational program. Each key informant stated that they encourage all students to participate in these programs. The FNP implemented the 5-2-1-0 Let's Go! program with the HR students, and the RD met with 75% of the HR students. During the audit period, 12% of the selected students (n=3) achieved their goal of decreasing their BMI, while 88% (n=21) of the students did not achieve this goal.

There were several limitations in this project. First, a small sample of selected students in the SBHC was audited. Second, a short time period was used for the record audit. Third, teachers were not included as key informants.

### **Discussion**

This program evaluation determined that the 5-2-1-0 Let's Go! program was not fully implemented with all middle school students, but most program components were implemented with a select group of high risk students. Components of the program that were not fully evident in the record audit were discussions of screen time and sugary drinks, however, observations in the SBHC indicate verbal interactions of limited soda and sports drinks. Health disparities were noticed among the selected students. The highest risk students were 6<sup>th</sup> grade African American males. In order to increase widespread implementation of the 5-2-1-0 Let's Go! program, several recommendations are suggested. Recommendations include health teaching in addition to social marketing to increase implementation and effectiveness of 5-2-1-0 in the school setting. Specifically, to post 5-2-1-0 posters strategically in the school, collaborate with teachers and parents in implementation of the 5-2-1-0 Let's Go! program, and provide hands on opportunities to practice 5-2-1-0, for example, cooking classes and health fairs for students and their family. These recommendations may help to activate cues to actions by providing information and promoting student awareness of the 5-2-1-0 Let's Go! program. Childhood obesity is a systems-level problem and necessitates an intervention that is widespread throughout the community (Rogers et al., 2013).



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